

~~Patent Claims~~

1. High voltage resistant edge structure in the edge region (RB) of a semiconductor component

- 5     • having a semiconductor body (1), at whose first surface (3) at least one inner zone (2) of the first conductivity type is adjacent,
- having at least one floating guard ring (15) of the second conductivity type arranged in the inner zone (2), and
- 10    • having inter-ring zones (16) of the first conductivity type respectively arranged in the inner zone (2), which are allocated in pairs to each floating guard ring (15), these inter-ring zones being arranged laterally such the [sic] they separate two respective consecutive floating guard rings (15) from one another,
- characterized in that
- 15    the conductivities and/or the geometries of the floating guard rings (15) and/or of the inter-ring zones (16) are set such that their free charge carriers are totally depleted when blocking voltage is applied.

2. High voltage resistant edge structure as claimed in claim 1,  
characterized in that

- 20    the width (r1...r5) of the inter-ring zones (16) increases in the direction of the semiconductor component and/or the width (d1...d4) of the floating guard rings (15) decreases in the direction of the edge of the semiconductor component.

3. High voltage resistant edge structure as claimed in one of the preceding claims,  
25    characterized in that
- the floating guard rings (15) or the inter-ring zones (16) respectively comprise the same width.

4. High voltage resistant edge structure as claimed in one of the preceding claims,

00630553-022100

Sub A5

the depth (t1...t3) of the floating guard rings (15) decreases in the direction of the edge of the semiconductor component.

6. High voltage resistant edge structure as claimed in one of the preceding claims,  
0 characterized in that  
at the outermost edge of the edge region (RB) of the semiconductor component, at  
least one space charge zone stopper (14,14',14'') is provided.

8. High voltage resistant edge structure as claimed in one of the claims 6 or 7,  
20 characterized in that  
the space charge zone stopper (14,14',14'') has a damage implanted region (14'') that  
is arranged in the inner zone (2).

9. High voltage resistant edge structure edge structure [sic] as claimed in one of the  
25 claims 6 to 8,  
characterized in that  
the space charge zone stopper (14,14',14'') has an electrode (14') that is metallic or  
that contains polysilicon, which is connected to the inner zone (2).

5

10

15

20

25

~~Add  $a^6$~~